colour were standing out in the sunshine on the edge of a pool, in the middle of the open bheel. I could see no way of getting within shot and expected them to get up any moment and fly off to the Brahmapootra. However, I left my labrador with a boy on the south side of the bheel to engage the attention of the geese, and making a wide détour crossed the bheel and got between the geese and the river. An exciting stalk then began; the going was very soft and entirely exposed and the geese, I could see, were very uneasy—one, as usual, the sentinel, head up, was staring in every direction; my only hope was a small herd of cattle grazing nearby, these I managed to work slowly towards the geese, creeping up when covered and crouching, still, when exposed. I had nothing but No. 8—so a pot shot was my only chance, eventually the cattle drifted apart and I had to take a long shot; he floundered about in the pool, but was retrieved in great triumph, one pellet had struck him in the head—his companions made off for the big river. He was in fine plumage and of course quite unmistakable, but the dark colouring was rather more dark ashey than dark brown as shown in Stuart Baker's plate.

I showed the goose to Mr. Buckingham Jones of Dibrugarh, who is a keen ornithologist, and was greatly interested.

My reference to the 'big river', the Bramapootra, reminds me of the derivation of the name given by the local 'uneducated' Assamese—who even today call it the Borompootar—in Assamese '*bor*' is big and, of course, '*putra*' spring or river. Sir Samuel Baker, in his books, always spells it (in italics) 'Borrompooter'—the name is understandable—the big river—the original inhabitants were animists and knew nothing of Brahma but it was easily corruptible into Brahmaputra, and, lately, German highly coloured prints used to be for sale in Dibrugarh for four annas depicting the 'Brahma'-putra gushing from the head of the God seated on a throne and surrounded by people somewhat resembling Hitler & Co.

Mothola Company Ltd.,
Dibrugarh, Assam,
January 26, 1943.

D. J. MONTAGNON.

XIV.—GYNANDROMORPHISM IN THE COMMON TEAL (*ANAS CRECCA* LINN.)

The Society recently received from Mr. H. W. Porter, Baluchistan, the head of a Common Teal shot at Quetta on 26th December 1942. The left side of the head shows the normal colouration and pattern of the adult male in summer and winter plumage; the right side is that of the adult female (or of the male in eclipse). A detailed description is given below:

Left side: As in adult male summer and winter plumage. Cheeks and lores chestnut. Thin cream-coloured lined from gape upwards along base of upper mandible over and under eye to nape, enclosing broad band of metallic green. This band still with slight admixture of a few unmoulted cinnamon-tipped brown feathers at its posterior end, near nape. Extreme point of chin (for 4 or 5 mm.) brown, the feathers tipped buff. Forehead, crown and nape

as in adult female, i.e. black-streaked brown, the feathers edged with buff on forehead and cinnamon-buff on crown and nape. Throat and foreneck parti-coloured medially, chestnut on the left side contiguous with the cheek, and whitish-buff on right. The division between the chestnut and whitish-buff is not clear-cut but some of the chestnut 'flows' into the white and vice versa.

Right side : As in adult female or in eclipse plumage of adult male. Cheek buffy-white. Upper throat and foreneck light buff more or less thickly spotted or streaked with blackish-brown. Indistinct blackish-brown streak from behind eye to nape. A tiny whitish patch under eye (also present under left eye). A single metallic green feather behind and slightly above eye the only indication of the broad metallic green band on the opposite side of the head.

Unfortunately merely the head, i.e., skull with mask (severed at the 'halal' cut) has been sent to us. The covering letter mentions that the rest of the plumage was female, but I feel that a critical examination would probably have shown the same bisexual characteristics as are present in the head. Also a morphological examination and dissection of the body would have proved of the greatest interest. The letter further remarks that the bird's right leg was missing below the tarsal joint. This may be accidental or congenital, and may or may not have to do with the otherwise abnormal condition.

The case is a highly interesting one and represents what I believe to be the first known occurrence in the Common Teal of that curious abnormality known as Gynandromorphism. Bird gynandromorphs or gynanders wear male plumage on one side of the body and female on the other; they are very rare and not much is known about them especially in life. Instances have been recorded in the Bullfinch (*Pyrrhula pyrrhula*), Chaffinch (*Fringilla coelebs*), Siskin (*Carduelis spinus*), the Pheasant (*Phasianus colchicus*) and in certain members of the families Ploceinae (Weaver Finches), Coerebidae (Sugarbirds of South and Central America), and Picidae (Woodpeckers).

In several examples that have been dissected a testis was found in the male half of the body (in most cases the right half) and an ovary in the female half. But sometimes this arrangement was reversed, as it presumably also was in the present case. Gynandromorphism is apparently less rare among insects, the commonest and most striking type being, as in birds, where the male and female halves of the body are sharply delimited lengthwise along the middle. In others a quarter of the body may be of one sex and three-quarters of the other. In some examples it is even less in extent, only patches of the characteristic form and colouration of one sex appearing on the body of the other. Natural gynandromorphism is apparently quite independent of the influence of sex hormones and is explained by an aberration in the chromosome distribution in the development of the gametes. And here a little digression is perhaps desirable.

Sex hormone is a chemical secretion of the gonads (testes in male; ovaries in female) which pours into the blood-stream in the same way as do hormones from the other ductless glands situated in various parts of the body, collectively known as the endocrine system. It circulates with the blood and is known to control the secondary sexual characters such as the beard in Man, antlers in most deer, and the plumage in sexually dimorphic birds. But it

can obviously influence an organism only *as a whole,* and therefore the possession by a gynander of both male and female sex glands could not by itself account for the clear-cut bipartite effect, for instance as seen in the plumage of bird gynanders.

'Cock-feathered' female pheasants are well known. It is also known that this peculiar condition is brought about by damage to the bird's ovary—atrophy, either through old age or disease. It has been proved experimentally that female feathering in the domestic hen (and presumably also in its wild relations) is due entirely to the influence of the female sex hormone discharged into the blood by the ovary. If the ovary of a domestic hen is removed—an operation known as ovariectomy—it will assume cock plumage at the next moult including the long tail. This is because the influence of the female sex hormone, on which hen feathering is dependent, has been removed. If a cock's testes are removed—by castration—although certain other changes such as shrinking in size of the comb will soon be observed, yet its plumage at the next moult will grow again unaltered in appearance. This proves that 'cock feathering' is really speaking the 'Neutral' phase of plumage and not dependent upon the male sex hormone. Thus by castrating a cock and ovariectomising a hen it is possible to produce 'neutral' birds that look closely alike. This neutral bird, however, can be further changed to male or female by engrafting it with the relative male or female gonads.

With the exception of some raptores chiefly of the genera *Falco, Accipiter* and *Circus* and certain other birds which possess paired functional ovaries, the general rule is that only the left ovary is functional while the right is suppressed and remains vestigial. Experiments show that if the left ovary of a bird is removed the right one, till now dormant, develops. But the curious point is that it develops not into an ovary to replace the missing one as one would expect, but actually into a male testis! Thus a hen in which the left ovary has been removed soon develops into a cock. The sex hormone released by the newly formed testis brings about, in the erstwhile hen, all the characteristics of appearance and behaviour of the cock even to the extent of attempting to mate with hens. Effective mating is however rendered impossible owing to anatomical disabilities, but an exceptional case is on record where such a sexually reversed bird, a good egg layer up till 3 years old began to crow at $3\frac{1}{2}$, and took on most of the male characters. At the age of $4\frac{1}{2}$ on being mated to a virgin hen it became the father of 2 chicks! It will thus be seen that it is actually possible to produce a cock (in this case even a perfectly functional one) by removing the left ovary of a hen!

As distinct from the *Natural* (due to chromosome derangement), *Artificial* gynanders have been produced in the laboratory thus: A cock was plucked of its feathers on one side. It was castrated and implanted with an ovary. Under the influence of the female sex hormone, the plucked side soon developed female feathering so that until the next moult that bird presented the characteristic bipartite appearance of a natural gynander. At the next moult,

however, the male half of the feathering disappeared and was replaced by female plumage all over.

33, Pali Hill, SÁLIM ALI.
Bandra, Bombay.

XV.—OCCURRENCE OF COMB DUCK (*SARKIDIORNIS MELANOTUS* PENN.) IN MYSORE.

With reference to Mr. R. F. Stoney's note xiii on p. 525 of vol. xliii, I have to record shooting a Comb duck (female) about 50 miles west of Bangalore on 14-1-43—the bird was solitary. This is the first of the species shot by me in S. India though I had definitely seen it once previously near Gundlupet, 40 miles south of Mysore City.

Bangalore, E. G. PHYTHIAN-ADAMS.
January 18, 1943. *Major.*
I.A., F.Z.S.

XVI.—RED CRESTED POCHARD (*NETTA RUFINA* PALLAS) IN MADRAS PRESIDENCY.

As reports of this duck in the Province appear to be scanty, it may be of interest to record that I shot a male from a flock of about 30 on a tank near Cumbum in the Kurnool District on 11-12-1942.

Bangalore, E. G. PHYTHIAN-ADAMS.
January 18, 1943. *Major.*
I.A., F.Z.S.

XVII.—NOTES ON THE VIVIPARITY OF THE COMMON INDIAN SKINK [*MABUYA CARINATA* (SCHNEIDER)].

A specimen of the common Indian skink, *Mabuya carinata* (Schneider) was collected from the suburbs of Calcutta on March 11, 1943, for the study of its protozoal contents and helminths by my colleagues Messrs. M. M. Chakravarti and G. K. Chakravarti. It was a gravid female and contained embryos in a fairly well-developed condition. It was handed over to me in a partially dissected condition for the collection and preservation of the embryos, and my thanks are due to my colleagues on this account. In view of the dubious viviparity of this species (Smith, '35, p. 268) it seems desirable to record the following observations.

The specimen was fairly large, measuring 124 mm. from snout to vent, the tail being 149 mm. The eggs with ripe embryos were arranged in fours, one after the other in a series, in each uterus. An ovary with immature ova in various stages of development was